Scientific American

NEW-YORK, MARCH 26, 1853.

Money Paid by Government for Inventions.

Within a few years Congress has appropriated a considerable sum of money for testing inventions, besides a great amount in purchasing patents. By the report before us, by Hon. W. H. Bissel, of Illinois, on the ether question, we learn that $110,000 have been appropriated to test inventions within the past ten years, but little of which has resulted in permanent success. We cannot say however, that we cavil at or blame government for making prudent and unextravagant appropriations to test reasonable and plausible inventions, nay, we admire and approve the spirit which dictates the appropriation of a reasonable sum to test any new and apparently useful invention, that would prove beneficial to our country. There is great danger, however, in making such appropriations, lest they may be granted for totally unworthy objects through crafty solicitation and an undercurrent influence. Out of nine appropriations to test inventions, six of them do not appear to have been altogether successful, at least they are not now, so far as we are informed, in use; such as $15,000 for Colt's submarine battery; $5,000 for preserving canvas; the testing of fire ships by U. Brown, $10,000; testing Crutchett's gas lights, $17,500; and $20,000 for testing Page's electro magnetic power; and $5,000 for testing inventions to prevent steam boiler explosions. The money thus expended was ostensibly for the benefit of science; but Morse's Telegraph, for which $30,000 were granted to test the line between Baltimore and Washington appears to be the only successful invention out of the nine for which an appropriation was made.

Our government has purchased quite a number of patents, and among the grants we perceive $76,300 to the heirs of Robert Fulton. We also perceive that $25,000 were granted to Messrs. R. S. McCulloch, and J. C. Booth, for the use of their patent processes for refining gold, which we believe is not used at all now, and respecting which there have been such hot words and controversy between the patentees.

Government has appropriated a great deal more than what appears in this report of the Committee on Ether; for example: $10,000 was paid for Hunter's propeller wheel, for one of our ships in the navy, and it turned out a complete failure. We suppose that others have received like benefits for producing like results. Uncle Sam is looked upon by many as a fine old gentleman, with exceedingly deep, wide, and altogether too heavy pockets, for the benefit of his health to carry. We sympathize with an inventor of moderate means who has an apparently good and useful invention, but which requires an amount of capital far beyond his ability to test fairly; in such a case we commend the inventor who has faith in his project, in soliciting Congress to test it fairly, and demonstrate its usefulness and benefit to man. But we are opposed to Congress voting money either to purchase an untried patent, or testing the merits of any new invention when the owners of the one or the author of the other has capital at his command, and abundant ability to introduce it into public use.

The Ericsson back to New York.

The Ericsson, or Hot Air ship is now lying at her old berth at Green Point, Williamsburgh. It will no doubt be interesting to our readers to know the present opinion of some of our papers about it, and what she is lying at that place for.

"The ship Ericsson, which arrived here on Monday, left the Capes on Friday afternoon, and stopped four or five hours on the way.—The confidence of the owners, it is said, was greatly increased in the caloric engine by the late trip. She went to Washington before she was complete in order to be there before the adjournment of Congress. She will now go to the shipyard at Williamsburgh, and remain about a month undergoing the finishing operations. The object thus far having been to see how well the machinery will work; it is supposed that the test of speed will be an object on her next appearance. It is claimed by some of the admirers of the new motive power, that when the maximum of speed is reached in the caloric engine, the steamers will not exceed them in rapidity by more than a knot an hour."—[Tribune of the 16th.

The caloric ship Ericsson, which returned to this port on Monday, is soon to leave for London, from whence it is intended to send her to Australia. Her recent trip to the South has established the partial success of the new principle, at the same time that it has suggested some important improvements, the introduction of which it is expected will materially augment her rate of speed. Her appearance in the Thames will create quite a sensation among the Britishers."—[New York Herald of the 16th.

The Herald of the 24th Feb. said, about the Ericsson, "the caloric experiment has been signally successful," it now says *partially* successful.

The "Tribune makes excuses for the bad performance of the Ericsson, by saying she went to Washington before she was complete. Her speed on her trip home, was about 4½ miles per hour. After her last trip down New York Bay, she was laid up at Green Point for a month getting some repairs made, and now after her trip to Washington she is to be laid up for another month's repairs.—These are not our reports but those of the papers who have hitherto so highly praised the Ericsson. Before the hot air ship will be able to compete with a steamship, she will have to get in new boilers and engines, use more coal, and keep a good supply of water in the boilers. Those ignorant men who have talked about her running faster if she had larger engines, would look blank if told she could not run as fast as the Arctic if she was stowed with hot air engines from top to bottom, but so it is.

What excuses are now made for the slow speed of this ship by the very papers who shouted and bayed a few weeks ago at James Watt, Robert Fulton, and all the inventors that ever lived, and all the steamboats in creation. The "Tribune" at last gives in and admits that after she has attained to her greatest speed, steamships will still run faster, does this look as if "the days of steam were numbered."

Since we last said anything on the question of hot air as a motive power, the subject was discussed two nights in the London Institute of Civil Engineers, and a paper was read on it by B. Cheaverton. Some of the most eminent men in the country, such as Stevenson, Rennie, Meadows, Sir Geo. Cayly, &c, were present. Drawings of the Ericsson's engines were presented and explained. They all condemned the regenerator as a fallacy, and the conclusion arrived at was, that with the amount of coal burned she made slower progress than a steamer would.

We have made but one or two commentary remarks; there is much that we could say, but we do not wish to take up too much room discussing one subject. We have presented a great deal of information respecting the Ericsson, because this ship has created a great sensation throughout the whole country, and our readers desire to have all the impartial information they can get about it. We will still present from time to time such information as may be new, instructive, and interesting about hot air as a motive power. We conclude by stating that the "American Journal of Science and Art" for March, after descibing the "Ericsson's" engines says, "we do not at present undertake to discuss the probable success or failure of this important enterprise," and thus the great gun fires neither a blank nor ball cartridge, the gunner evidently exhibiting either a fear or a want of ability to do so.

Railroads and their Accidents in New York.

By the Report of our State Engineer, Wm. McAlpine, C. E., of the railroads in this State, for 1852, we learn that the whole number of passengers carried over 29 railroads, was 7,440,653, and the number of miles travelled was 343,358,545. The number of passengers injured was 82; killed, 26. The number of employees injured was 89; killed, 76; making the total number injured, 265, and killed 162. The ratio of passengers killed to the number who travelled *one mile*, is one for every 13,206,098 passengers carried. By Dr. Lardner's statistics of railways, we learn that in England the accidents to passengers who travelled one mile has been as one to 65,363,736 passengers carried. The accidents on the roads in New York to passengers therefore are nearly five times more numerous than they have been in England. There is no doubt in our mind but if all our roads had double tracks we would have fewer accidents, but at the same time we are convinced that our tracks are not sufficiently guarded; they should be fenced in, and no person should be permitted to travel on them. There should be a law made to punish trespassers, but this cannot be done until the tracks are enclosed. No less than 76 persons killed by being run over, while standing or walking on the track, and only 26 by collisions. In England they are far behind us in the construction of their cars; if they would adopt our comfortable long cars there, instead of using their old fashioned *dumpy ones*, they would show some appreciation of Brother Jonathan's good sense and ideas of railway comfort. Great improvements have yet to be made in railway management, as connected with safety and comfort, after which the friends of Mr. Ray and the American Institute may modestly claim some testimonial of gratitude to those benefactors of American genius, who so promptly offered and awarded those prizes for railroad improvements.

Events of the Week.

EVAPORATING SUGAR—BESSEMER'S PROCESS—The claims of two patents for improvements in the manufacture of sugar, were published in the last number of the "Scientific American. The patentee," Henry Bessemer, has long been favorably known in London, in connection with the refining of sugar. Some enquiries having been made of us since last week, respecting the alledged improvements, we will present all the information of which we are in possession at present.

Hitherto all sugar has been boiled to expel the moisture, and leave it fit for crystallizallization. To boil sugar under a high heat completely discolors it, and previous to 1813, when Mr. Howard invented the vacuum pan to boil the sugar under a low heat, it was almost impossible to produce white sugar at all. The vacuum pan and the charcoal filter, invented in France by Mm. Derome & Cail, in 1824, produced two revolutions in the manufacture of sugar, and it is asserted by Mr. Bessemer's admirers that his new improvements will produce another revolution.

By the new process the boiling of the sugar juice is dispensed with, the water is driven off the juice by bringing it in contact with currents of dry hot air blown in upon it as stated in the claim. The hot air is made to sweep over the surface of the fluid which is taken up on revolving metal plates surrounding a hollow perforated cylinder. By this simple method it is said white syrups are concentrated without producing any discoloration at all. The air is heated for this purpose by being driven by a blower through tubes passing through an oven or furnace.—

The second patent claim is for an improved filter. Crude sugars are of an ugly dark brown color, which is due to an external coating of molasses, which surrounds the crystals of the sugar. This crude sugar in an almost fluid state, is placed in a machine and spread in a thin sheet in a circular table of wire gauze. A partial vacuum is formed underneath by an air pump, and the wire gauze table rotates under a series of fine jets of water, which pass through the sugar with great velocity. This washes off all the molasses, leaving a pure and nearly white sugar. These operations are said to be performed with extraordinary facility and in an incredibly short space of time. Sugar boiling, refining, &c., are practical arts, that is to say, any departure from old practices can only be determined as an improvement by a *fair trial*, nothing else can decide the question.—Opinions, however, based upon experience, may be given, and with respect to the drying of sugar with hot air, we think well of it, we believe that it will operate well, it rightly conducted.

MOUNTAINS IN THE SEA.—Capt. Denham, F. R. S. of the British Navy, while on a passage from Rio de Janeiro to the Cape of Good Hope took deep sea soundings of the great depth of 8½ miles. In the "London Times" it is stated that soon afterwards he sounded again in only 19 fathoms, on an extended coral bank, thus showing that there are some very high submarine mountains in the ocean, which for the practical benefit of man as a commercial being it is of more importance to know, than the height of the mountains of the moon. It shows the necessity and importance of acquiring a thorough knowledge of the configuration of the bottom of the seas and oceans. There ought to be hydrographic maps of all the seas and oceans, and all maritime nations should join in this great work. Something has already been done by our navy, but a great work is still before us. What has been done will be found by our readers in the excellent Reports of Lieut. Maury, of the National Observatory.

At the present moment the British have two vessels, the Herald and Torch, on a surveying expedition on the Pacific, and particular instructions have been given to them to obtain deep sea soundings. They have discovered two coraline banks, extending 80 miles, sudderly jumping from 200 fathoms, to no bottom at all (beyond the lead) and then to 19 fathoms. The temperature of the sea at 1,500 fathoms was 40°, where at the surface it was 90°. The temperature at the bottom, however deep the soundings, was never below 40°. The sun's rays were traced to have penetrated to 66 fathoms.

A survey was made of the coraline banks spoken of, and the *Herald* was at anchor in the middle of the ocean for a week to the utter astonishment of some ships whose tracks lay in that direction.

Tin Plate Manufacture.

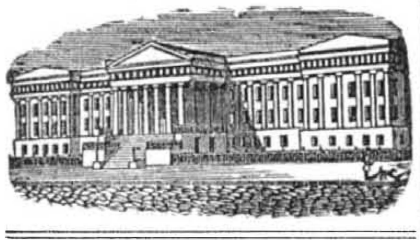
The manufacture of tin plate is one of which England can truly boast, as she is the heart centre and complete monopolist of it.—She supplies the world with it, and no country uses so much as our own. There is more tin plate used in the United States than there is in England, and the consumption of it is increasing rapidly. The majority of the roofs of our new buildings are of tin, and we do not make an overstatement when we say that for one house erected ten years ago and covered with a tin roof, there are now fifty. The price of the article has greatly advanced, and so far as we know no attempt has ever been made to manufacture it in this country. If it can be done profitably, there is a wide field open for some enterprizing company, if not, the article should be admitted duty free, as it interferes with none of our manufacturing interests, and we have now a surplus revenue.

Tin plate is one of the most useful metallic products. No other metallic product is so adaptable in its nature to be made into every form for public and domestic use. At the present time, manufacturers of tin ware and whitesmiths generally, are complaining of the high price of tin-plate; if it were cheaper than it is, we are satisfied that it would be a general benefit to our people.

The Ray Premiums.

The Committee of the American Institute has reported on the Ray Premiums; date of Report March 15, 1853. Names of the Committee; Geo. Stark, M. Sloat, W. Cummings, J. R. Trimble, F. Hungerford. There were four prizes offered, two of which only have been decided upon, viz., "the railroad brake" for which the prize of 400 has been awarded to T. A. Stevens, of Burlington, Vt. The prize for a "night seat for cars," $300, has been awarded to Samuel Hickox, of Buffalo, N. Y. The prize of $1,500, for the best invention to prevent railroad collisions, the breaking of railroad axles, and the prize of $800 for the best invention to exclude dust from cars, they did not decide upon. The reasons given by the commitee are: "Doubts of their utility (the inventions exhibited) for actual service."

The excuse offered by the Committee for taking such a long time to make the report, is that the private business of the members made it very difficult to get a sufficient number of them together. And so out of the sum of $3,000, which was offered as prizes, the Institute has awarded $700. This brake was illustrated on page 132, Vol. 7, Sci. Am.



Reported Officially for the Scientific American

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING MARCH 15, 1853.

TURNING LATHES—By Warren Aldrich, of Lowell, Mass.: I claim, first, the improvement described, which consists in giving an automatic motion to the upper slide or tool rest, when set at any angle to the bed-piece of the lathe, instead of moving it by hand, so as to turn with ease and accuracy, solid or hollow cones, as set forth, by means, substantially, of the screw, revolving worm shaft, and revolving plate, as set forth.

EXPRESSING SUGAR CANE JUICE—By Henry Bessemer, of Baxter House, England. Patented in England, Feb. 24, 1852: I claim the improvement of constructing each of the cane-pressing tubes, substantially as specified, viz., with sides made parallel some distance (for the working of the piston against), and to approach one another towards the mouth of discharge of the pressed cane, whereby advantages as mentioned are gained.

Also the combination and arrangement of the compresses, or pressing tubes, and two conjoined pistons, with one revolving, actuating shaft, and its mechanism, to give to their plungers or pistons a simultaneous reciprocating rectilinear motion, all as mentioned.

HEATERS FOR SUGAR SYRUP—By Henry Bessemer, of Baxter House, England. Patented in Eng., Feb. 24, 1852: I am aware that in locomotive engines water has been heated by standing in tubes exposed to the flame or direct heat of a furnace; now such a mode of heating will not answer for the treatment of the saccharine syrup, as the heat of a furnace is not susceptible of regulation, as is that from steam, the latter not burning the syrup, or injuriously heating it, as would the former.

I have discovered that the heat of steam applied to syrups, as described, in connection with the action of gravity, produces advantages, in rapidly heating the syrup, unattainable by any process, when the syrup is passed through pipes heated by direct heat, or the flame of a furnace.

It is, therefore, that I expressly disclaim the mode of heating water, by allo ing it to flow through a stand or tube, heated by the direct heat of a furnace, but base my invention of the method described of treating saccharine syrup, by means of the apparatus represented, as arranged and constructed to operate, for the purpose set forth, by the power of gravity and steam, the same consisting of a combination of the receiving vessel, series of tubes, a chamber and pipe, and the steam chamber, having induction and eduction pipes, as specified.

TOPPING-LIFT AND PEAK HALYARD BLOCK OF SAIL VESSELS—By Wm. & S. G. Coleman, of Providence, R. I: We claim supporting the topping-lift, by means of a crane, of such form and construction, that when the topping-lift sags, when the sail is hoisted, it shall not foul or chafe against the peak halyard block.

Also, so arranging and constructing such crane, that it may also support the peak halyard block, as specified.

ROCKING CHAIRS- By Peter Ten Eyck, of New York City: I claim in combination with a sitting chair, so arranged that the seat may rock upon the legs, or support the safety piece or guard, hung eccentrically to the pivot of the bar on which it rests, and the spring for preventing the top part of the chair from rocking too far or too suddenly, as described

KNITTING MACHINES—By Moses Marshall (assignor to W. Aldrich & L. B. Tyng), of Lowell, Mass.:

I claim, first, connecting the rotary depressers and the feeder, which carries the thread, with the arm which connects the reciprocating cam bores, as described.

Second, dividing the plates which support the needles and cast the stitches at the angle of intersection of the two sets of needles, so that the fabric knit, will or may pass between them

Third, forming the stitches alternately on each side of the needle rests, by two sets of needles placed at an angle to each other, and operating one needle at a time, as set forth.

RE-ISSUE.

SELF-ACTING MULES FOR SPINNIGG—By Wanton Rouse, of Taunton, Mass Patented originally Nov. 2, 1852: I claim, first, governing the revolution of the spindles in winding the yarn on the cop, also in backing off during the progressive stages of the building, by means of a cam or any equivalent device of irregular form, circumferentially with the said irregularity, varying from end to end, the said cam or equivalent being caused to operate upon the mechanism which drives the spindles, in any way that will produce the results set forth.

Second, the mechanism for causing the finger through which the irregular surface of the cam or its equivalent, acts upon the mechanism which drives the spindles, in backing off and building on, to traverse the said cam, and to be kept close to its surface, consisting of the screws, nut, cord or chain, lever, and stud, operating in combination, as set forth.

First Decision Under the New Steamboat Law.

The inspectors of steamboats at Cincinnati, appointed under the new steamboat law passed by Congress, have made a thorough investigation into all the facts touching the recent collision on the Ohio between the steamers Falls City and Pittsburg. The testimony elicited established the following facts:—The night was a foggy one when the collision occurred, and the "rules and regulations" requiring the "ringing of the bells and blowing the whistle at intervals of two minutes when running in a fog," were not complied with. Had they been complied with, the collision would not have taken place. As it was, laudable efforts were made by both boats particularly the Falls City, to prevent it.—The signal bell of the Falls City was tapped twice, signifying her wish to go to the larboard, and that of the Pittsburg tapped once, expressing a desire to go to the starboard, but unfortunately, the signal of one was not understood by the other. It was also proven that the collision would have been rendered less harmless had both boats instantly stopped on discovering each other. This was done by the Falls City, but not so promptly by the Pittsburg. In view of all the facts, they acquit the two engineers who were on duty at the time, and suspend for twenty days the license of John White, the pilot of the Pittsburg, and the license of Jeremiah Mason, the pilot of the Falls River for ten days, for not observing the rules and regulations. The inspectors state that the penalty in this case is made light from the fact that the rules are new, and as yet imperfectly understood; but that in all future cases they shall exact the most rigorous penalties of the law.

(For the Scientific American.)

Drying Meal and Lumber---Experiments with Steam Heat.

I took out a patent in March last for my machine noticed in the "Scientific American," July, 1847, and am now using the invention in connection with Hon. H. L. Ellsworth, of this place, for Kiln-drying Corn Meal and Hominy for shipment.

The primary object in view in getting up this invention, was to kiln-dry with little fuel, and use steam as a regulator of the heat, to prevent scorching. In the old mode of using steam, much heat is lost from the arch, and also by conducting the steam at some distance from the generator (as is frequently the case); it is nearly condensed by the time it reaches the point where its influence is needed. To remedy this, you will remember I pass the flues from the arch several times through the steam chamber. Some heat is also lost by the old mode, in permitting the steam to escape in order to make room for a new and hotter supply. This is also remedied by making only steam sufficient to keep the box full, and keep up the heat by the flues from the arch.

I did not, however, suppose I could heat the steam beyond about 212° with the small confinement which I used (there being always an open discharge at the bottom of the steam box for the steam to pass off when there was any pressure). But I soon found that I was actually heating the steam with only this small confinement, even to the point of ignition.

Being engaged in the lumber business, I thought the plan a good one for seasoning it, and accordingly put it at once into practice with the happiest results. I also applied the heated steam to seasoning barrel staves, by which I removed the sap from them in a few hours, and they would be fit to work with little exposure to the air, to expel the moisture occasioned by contact with the steam. The staves thus seasoned proved to be stronger, and would dress smoother than those seasoned in the open air.

Since the matter of heating steam without confinement was a disputed point, I determined to make a trial that would settle the matter. I had often set fire to wood by the steam, in making my experiments; but many were skeptical because the books were against it.

For the purpose, therefore, of making a thorough trial, I constructed a double box for the steam, and filled the spaces between them with saw-dust for a non-conductor. I then made an excavation in the ground of the size of the steam box, and of sufficient depth, into which I placed a stove (with about 40 feet of 7 inch pipe, to save heat), and then placed the steam box, without a bottom, over the excavation, and banked the dirt up to it to keep in the heat. A pan of water was placed upon the stove to make steam to fill the box, the pan being supplied with water as often as it evaporated. I then weighed 1000 feet of green white wood lumber and placed it in the box, commencing four feet above the stove and pipe, to avoid the direct heat of the arch. The lumber was stuck up with lath between, to allow the free circulation of steam and heat through it. As the heat and steam were both generated below the lumber, they rose together into it,—the extra heat to liquefy the sap, and the steam to keep the pores of the lumber open for the sap to pass out, and also to keep the lumber from scorching in case too high a heat should be raised. It was therefore expected I should make a two-fold experiment, viz., to ascertain whether I could season more rapidly than by the old method, and also to settle the matter whether I could heat the steam without pressure beyond 212°.

Those who were skeptical said, if I could kiln-dry the lumber in four days, they would be satisfied. I built a fire in the stove (placed in the vault beneath the lumber) at about 5 o'clock in the morning, and kept up what would be equivalent to a good bar-room fire in a cold day. The box was soon filled with steam, made in part, doubtless from the green lumber, and sooner than many persons would imagine (from the small amount of fuel used) the lumber was evidently hot—indicated by steam, which at times forced its way out through the box. In about 12 hours from the time of making the fire, viz., at 5 o'clock in the afternoon, I discovered smoke issuing from a point in the kiln about midway of the lumber, at a place where, at times, during the day, I had seen small quantities of steam escape. Since the lumber could burn no faster than air was admitted at that place, I partially closed the aperture and continued the fire about an hour longer—then opened the kiln, extinguished the fire (which had burned but a few feet), and removed the lumber, while hot, in order to permit its own heat to expel the moisture occasioned by the steam. When the lumber was cold I re-weighed it, and found I had diminished its weight 1200 lbs. and actually set it on fire with the steam!

On examining the lumber the skeptical gentlemen acknowledged it was well seasoned, or at least that the sap was all removed, and proceeded at once to prepare it for constructing a building.

But I do not intend to season thus rapidly, nor do I think it policy, for the benefit of the timber, to raise the steam to so high a heat, and for reasons which will appear hereafter. But that the steam was raised to the point of ignition I will proceed to give the evidence. The stove was so arranged that no sparks could issue from it into the lumber above, and the pipe was not only sound, but the joints were cemented, thus avoiding the possibility of setting fire to the lumber by means of sparks. Then add to this the improbability of a spark passing four feet through dense steam before reaching the lumber above the pipes, and then passing in a zig-zag course, through sixteen thicknesses of boards, stuck up as before-mentioned, before reaching the point where the fire commenced,—and the impossibility of the fire being kindled by the sparks will be settled.

The known fact that steam, however hot, will not ignite without being supplied with air, is also another evidence that this was done by the steam; as the fire took at a place quite distant from the arch, and at a point where a crack in the box admitted the air and discharged steam. At the same time a board, making a part of one end of the vault beneath and placed only one foot from the stove, was neither colored nor scorched by the heat, as no air was admitted at that point. I called the attention of many scientific men to the experiment, and none expressed a doubt that the lumber was set on fire by the steam.

You doubtless remember the report that was made to the Academy of Science, in Paris, a few years since, by a M. Viobelta, of some experiments which he had made in the seasoning of lumber by a high heat of steam. He placed some pieces of the different kinds of wood into a steam boiler, and then raised the heat by means of pressure to 480°. The pieces thus seasoned he afterwards submitted to the test, in connection with other like pieces, not steamed, and found their susceptibility to resist fracture had been increased by this seasoning (in the different kinds of wood), from 2-5ths to 5-9ths, besides causing them to receive a higher polish.

Lumber seasoned by steam has many advantages over that seasoned by hot air, since the steam removes the sap, which is one of the great causes of the shrinking, swelling, and warping of lumber, while the hot air dries this sap into the lumber, and causes the lumber to be brittle, liable to shrink, swell, and warp, as well as diminishing its strength and value for building purposes. Lumber can be seasoned as much in 24 hours by steam at 500° as in a common board kiln in two weeks, or in the open air in six months.

I will name some some of the advantages of the heated over the common steam in the kiln-drying of grain, flour, and meal. By my process you will remember the grain, &c., is passed back and forth through the dryer, by means of conveyers, inside of tubes; in order to successful ventilation (a point often overlooked) both ends of the grain tubes are left open, and as often as the grain is conducted 6 feet, inside of the tubes, which are surrounded by the heated steam, it is conveyed 2 feet entirely in the open air, for ventilation. By the ordinary heat of steam, it would be impossible to keep up a sufficient amount of heat in the tubes to dry rapidly and successfully, unless by greatly increasing the size and expense of the machine.

It is a great saving of fuel, since the heating of the steam is performed by the escape heat from the arch, and instead of making steam continually to supply the place of that which has given out only a few degrees of heat, and has passed out into the air, or has been condensed; the escape heat is applied, which, in a great measure, keeps the steam from condensing, and even when allowed to condense, it returns to the pan beneath, to be again raised in steam as needed, without the loss of heat. Another advantage is the susceptibility of steam to take up and hold several times its own amount of heat as latent, and thus when the flues passing through the steam chamber become overheated, it takes up the heat and holds it as latent, to be imparted to the grain tubes as needed, while, at the same time, it acts as a regulator of the heat to keep the tubes from scorching the grain, meal, &c., in its passage through them as is often done in the case of hot air.

In the heating of rooms, also, by steam, a great gain will of course result from starting the steam on its mission through the building freighted with five or six hundred degrees of heat, rather than the usual heat of 212°. The drying of paper could be greatly facilitated in the paper mills, by using this means of raising a high heat of steam, as the steam would be thus required to give out several hundred degrees of heat before it is condensed.

Green peas, corn, and beans can be rapidly dried by this process without danger of scorching or coloring, and without the trouble of changing from the oven to the air and air to the oven.

I have taken 21 lbs. of water from a barrel of meal and 15 lbs. from a barrel of flour, and the flour, when baked, made more and better bread. Corn may be kiln-dried in the ear (in the early part of the season) sufficiently to make it shell, by putting it into the lumber car, which is placed on a track running through the dryer. The lumber is stuck up on the car, and the car is then run into the dryer, by means of double doors at each end, the doors are closed, and the lumber is steamed on the car, and then passed out at the other end on a track, and another car is run into the dryer. Thus no time is lost, and the heat of the kiln is not wasted by being long kept open.

H. G. BULKLEY.

La Fayette, Ind., March, 1853.

Cotton Covering for Hot Beds.

The cotton is first stretched on the frames, and then coated with a composition consisting of three pints of best old boiled linseed oil, four ounces of white resin, and an ounce of sugar of lead; the latter being first ground with a little oil, and the oil and resin heated to make them mix. A coat of this should be applied every season just before use.

A telegraph line is now being constructed in California from Sacramento City to Mormon Island, Columbia, Placerville, Auburn, Grass Valley, and Nevada—a distance of one hundred and five miles. The posts have been planted on all but fourteen miles of the route.

Horse Stealing has become so prevalent in Northern Indiana, that there are societies of the best citizens organized in nearly all the counties to arrest and bring the rogues to punishment.